Federal Aviation Administration

Orlando FSDO

141 Safety Summit

Required Maintenance Documents

Presented to: 141 Flight Schools

By: Mark Laughridge, FAASTeam

Date: February 12, 2015

Required Maintenance Documents

EXAMINER REMARKS:
Applicant could not make an airworthiness determination about the aircraft. When asked when the last 100hr inspection was, he started looking in the front of the 1st of 3 airframe logbooks. Finally stated <u>"that is the mechanics responsibility".</u>

EXAMINER REMARKS:
Oral Exam:
IE: PTS/Special Emphasis Areas
IID: Ground Effect(missed on knowledge and oral exam)
IIJ: Airworthiness(unable to discuss airworthiness req)
IIK: Airspace (missed on knowledge and oral exams)

REVIEW OF RESPONSIBILITIES

- **DOCUMENTS**
  - Airworthiness
  - Registration
  - Operating Limitations
  - Weight & Balance
- **REQUIRED MAINTENANCE – INSPECTIONS**
- **REQUIRED MAINTENANCE - RECORDS**
- **AIRWORTHINESS DIRECTIVES**
  - Annual - Transponder
  - 100-hour - ELT
  - Pitot-static

REGISTRATION NOT TRANSFERABLE

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION – FEDERAL AVIATION ADMINISTRATION
CERTIFICATE OF AIRCRAFT REGISTRATION

This certificate must be in the aircraft when operated.

NATIONALITY AND REGISTRATION MARKS N 172CC

AIRCRAFT SERIAL NO. 172N17211

MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT
CESSNA 172N

ICAO Aircraft Address Code: 50222105

ISSUED TO

Smith, Pete
172 Cessna Dr
Anywhere, FL 17272

Individual

This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons.

It is certified that the above described aircraft has been entered on the register of the Federal Aviation Administration, United States of America, in accordance with the Convention on International Civil Aviation dated December 7, 1944, and with Title 49, United States Code, and regulations issued thereunder.

DATE OF ISSUE September 24, 2010
EXPIRATION DATE June 30, 2015

[redacted]
ACTING ADMINISTRATOR

U.S. Department of Transportation
Federal Aviation Administration

AC Form 8050-3 (10/2010) Supersedes previous editions

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

STANDARD AIRWORTHINESS CERTIFICATE

1. NATIONALITY AND REGISTRATION MARKS	2. MANUFACTURER AND MODEL	3. AIRCRAFT SERIAL NUMBER	4. CATEGORY
N12345	**Boeing 747-400**	**197142**	**Transport**

5. AUTHORITY AND BASIS FOR ISSUE

This airworthiness certificate is issued pursuant to the Federal Aviation Act of 1958 and certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to conform to the type certificate, therefor, to be in condition for safe operation, and has been shown to meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention on International Civil Aviation, except as noted herein:

EXEMPTION NO. 2713A FAR 25.471(b): Allows lateral displacement of C.G. from airplane centerline.

6. TERMS AND CONDITIONS

Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator, this airworthiness certificate is effective as long as the maintenance, preventive maintenance, and alterations are performed in accordance with Parts 21, 43, and 91 of the Federal Aviation Regulations, as appropriate, and the aircraft is registered in the United States.

DATE OF ISSUANCE	FAA REPRESENTATIVE	DESIGNATION NUMBER
11/29/92	*John Q. Publican* **John Q. Publican**	**DMIR ANM 1234**

Any alteration, reproduction, or misuse of this certificate may be punishable by a fine not exceeding $1,000, or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS.

FAA Form 8270-2

AIRCRAFT OPERATOR RESPONSIBILITIES

– Complying with the Operating limitations specified in the Approved Airplane flight manual, markings, and placards. including weight and balance, making sure they are in the aircraft and complied with.

Item	Weight	Arm	Moment
Airplane Empty Weight	2,100	78.3	164,430
Front Seat Occupants	340	85.0	28,900
Rear Seat Occupants	350	121.0	42,350
Fuel	450	75.0	33,750
Baggage Area 1	80	150.0	12,000
Total	3,320		281,430
			281,430 divided by 3,320 = 84.8

“What's one more box, its doesn’t weight much, just throw it in the back”

Required Maintenance

91.405 - Each Owner of Operator of an Aircraft

a) **Shall** have that aircraft inspected as prescribed in subpart E of this Part and… have discrepancies repaired as prescribed in Part 43 of this chapter;

b) **Shall** ensure that maintenance personnel make appropriate entries in the aircraft maintenance records indicating the aircraft has been approved for return to service;

Required Maintenance

91.405 - Each Owner of Operator of an Aircraft

c) Shall have any inoperative instruments or item of equipment, permitted to be inoperative by 91.213 of this part, repaired, replaced, removed, or inspected at the next required inspection; and

d) When listed discrepancies include inoperative instruments or equipment, shall ensure that a placard has been installed as required…

Required Maintenance

91.407 Operation after maintenance…

a) No person may operate any aircraft that has undergone maintenance… unless-

1) It has been approved for return to service…

2) The maintenance record entry required by Part 43.9 or 43.11 as applicable has been made.

Required Maintenance

91.409 Inspections

a) … no person may operate an aircraft unless, within the preceding 12 calendar months, it has had –

1) An annual inspection in accordance with part 43 and has been approved for return to service….

Part 43.9 Maintenance Record Entry

a) Each person who maintains, performs preventive maintenance, rebuilds, or alter an aircraft, airframe, aircraft engine, propeller, appliance, or component part **shall** make an entry in the maintenance record of that equipment containing the following information:

1) A description of work performed.
2) The date of completion of the work performed.
3) Name of the person performing the work if other than the person specified in (a)(4).
4) The signature, certificate number and kind of certificate held by the person approving the work.

Part 43.9 Maintenance record entries

February 12, 2015

Replaced the left main tire with a new tire, size 6.00 X 6 in accordance with the Cessna Maintenance Manual by Pete Smith.

Matt Mechanic 2468135 A&P

Part 43.11 Inspection record entry

a) The person approving or disapproving for return to service an airframe, … shall make an entry in the maintenance record of that equipment containing the following information:

1) Type of inspection and a brief description…
2) Date of inspection and aircraft total time in service.
3) Signature, certificate number and kind of certificate held by the person approving for return to service…
4) Certifying statement "I certify that this aircraft has been inspected in accordance with (insert type) of inspection and was determined to be in airworthy condition".

Appendix D – Scope and Detail of Items to be included in Annual and 100 – Hour Inspections

(a) Each person performing an annual or 100 – hour inspection shall, before that inspection, remove or open all necessary inspection plates, access doors, fairing, and cowling. He shall thoroughly clean the aircraft and aircraft engine.

(b … j)

Federal Aviation Administration

Part 43.11- 91.417 Maint. - Inspection Signoff

Date: _____ ACTT: _____ Tach/Hobbs: **(Optional)**_____

Enter the type of inspection(s) performed & brief description:

(**Part 91.417 requirement**)
Enter accomplishment of all A.D.'s including the number, revision date, method of compliance, and if recurring, the next time/date it is due.

(Part 43.10 requirement)
Enter replacement or inspection of any component part with Airworthiness Limitations (include part, serial number, and total time in service for that component).

Enter removal and installation of any serialized components
(include part, serial number, and total time in service for that component).

Enter description of any other general maintenance performed. **(ELT 91.207)**

(Required certifying statement)
I certify that this aircraft was inspected in accordance with a (insert type) inspection and was determined to be in an airworthy condition. All work was accomplished in accordance with current Federal Aviation Regulations and manufacturer's maintenance instructions.

*Signature*_____ *Certificate #*_____ *Type of Cert*. _____

Part 43.11- Inspection Signoff

Date: **February 12, 2015** ACTT: **12,215.1** Tach/Hobbs: **2163.8**

Performed an annual inspection in accordance with the Cessna 172 100-hour/Annual checklist found in the Cessna Maintenance Manual. Serviced the aircraft in accordance with the Cessna Maintenance Manual. Removed aircraft starter, P/N: FL0172, S/N: 369631 and replaced with P/N: FL0172, S/N: 246864. Complied with AD 87-20-02 R3, 8-22-94 by inspection of seat track rails, due re-inspection on or before 02-12-16 or 12,315.1 hours. Replaced ELT battery, expiration date 02-12-17. ELT inspected in accordance with 91.207 (d) (1-4).

I certify that this aircraft was inspected in accordance with an Annual inspection and was determined to be in an airworthy condition.

Matt Mechanic 2468135 A&P/IA

Required Maintenance Documentation

Part 91.207 Emergency Locator Transmitters

a) No person may operate a US registered civil airplane unless-

c) ELT Batteries … must be replaced… when the transmitter has been used for more than 1 hour or 50% of its useful life has expired per the manufacturer.

d) Each ELT must be inspected within 12 calendar months after the last inspection for-

1) Proper installation;

2) Battery corrosion;

3) Operation of controls and crash sensor;

4) Presence of sufficient signal radiated from its antenna.

Required Maintenance Documentation

February 12, 2015

Replaced ELT battery, expiration date 02-12-17. ELT inspected in accordance with 91.207 (d) (1-4) and approved for return to service.

Matt Mechanic 2468135 A&P

Required Maintenance Documentation

QUALITY CONTROL MANUAL

Maintenance Release Form – Single Altimeter (91.411 / 91.413)

1-1-2010 *TTAF* *TACH* *A/C N#*
The Altimeter tests required by FAR 91.411 and transponder tests required by FAR 91.413, including data correspondence required by 91.413 have been performed and found to comply with FAR Part 43, Appendix E and F. **ALTIMETER #1***: MFG P/N, M/N, S/N*, tested to _____ ft. on ***date***. Encoder correspondence was tested to _____ft. on ***date***. **TRANSPONDER**: *MFG, P/N, M/N, S/N* tested on *date*. **STATIC SYSTEM** leak tested on ***date***. Details are on file at the repair station under Shop Order # _____.

_____
Inspector's Name

Maintenance Release Form – Transponder (91.413)

12-12-2009 *TTAF* *TACH* *A/C N#*
The Transponder tests and inspection as required by FAR 91.413 in accordance with FAR 43, Appendix F, have been performed on **TRANSPONDER**: *MFG, P/N, M/N, S/N.*

_____
Inspector's Name

Part 91.417 (a) (2) (v)

"Complied with AD 87-20-02 R3, 8-22-94 by inspection of seat track rails, due re-inspection on or before 02-12-16 or 12,315.1 hours"

"The current status of applicable AD's including for each, the method of compliance, AD number and revision date and if the AD involves recurring action, the time (aircraft time) and date when the next action is required"

Required Maintenance Documentation

Airworthiness Directive Compliance Record

Airframe: Type _____ S/N _____ N: _____

Engine: Make _____ S/N _____

Appliance: P/N _____ S/N _____

AD Number	Title	Effective Date	Compliance Due Date	Date of Compliance	Method of Compliance	Total Time in Service at Compliance	Next Due	Signature	Type and Number

Method of Compliance refers to the section within the AD accomplished.

Required Maintenance Documentation

AIRCRAFT REGISTRATION NO.

31-7652130
AIRCRAFT SERIAL NO

PA 31 350
TYPE AIRCRAFT

adNote

2002-12-7 N/R
AD NUMBER

Textron Lycoming Engine

If multi-engine Left ☐ Right ☐ Front ☐ Rear ☐ Model No. Serial No:

DATE	TOTAL TIME AT COMPL.	TACH OR RECORDING METER TIME AT COMPL.	METHOD OF COMPLIANCE	NEXT COMPL DUE AT TOTAL TIME	NEXT COMPL DUE AT DATE, TACH, OR RECORDING METER TIME	AUTHORIZED SIGNATURE & NUMBER

Amendment 39-12779. Docket No. 2000-NE-36-AD. **Supersedes AD 2000-18-53.**

Applicability: This airworthiness directive (AD) is applicable to the reciprocating engine models in the following Table, that were shipped from the factory between April 1, 1999 and October 4, 2000, or rebuilt, or overhauled, or had the oil filter converter plate kit part number (P/N) LW-13904 or gasket P/N LW13388 replaced:

Engine Applicability Table

O-320	-H1AD, -H1BD, -H2AD, -H2BD, -H3AD, -H3BD
(L)O-360	-A1AD, -A1F6D, -A1G6D, -A1LD, -A3AD, -A4AD, -A5AD, -E1A6D
IO-360	-A1B6D, -A1D6D, -A3B6D, -A3D6D, -C1E6D, -J1AD, -J1A6D
(L)TO-360	-A1A6D, -C1A6D, -E1A6D, -F1A6D
TIO-360	-C1A6D
(L)HIO-360	-E1AD, -E1BD, -F1AD
O-540	-H1A5D, -H1B5D, -H2A5D, -H2B5D, -J1A5D, -J1B5D, -J1C5D, -J1D5D, -J2A5D, -J2B5D, -J2C5D, -J2D5D, -J3A5D, -J3C5D, -L3C5D
IO-540	-C4D5D, -K1A5D, -K1B5D, -K1E5D, -K1F5D, -K1G5D, -K1J5D, -L1A5D, -L1B5D, -M1A5D, -M1B5D, -M2A5D, -T4A5D, -T4B5D, -T4C5D, -U1A5D, -U1B5D, -V4A5D, -W1A5D, -W3A5D
(L)TIO-540	-K1AD, -S1AD, -AA1AD, -AB1AD, -AB1BD, -F2BD, -J2BD, -N2BD, -R2AD, -T2AD, -V2AD
AEIO-540	-L1B5D
TIO-541	-E Series
TIGO-541	-D1A, -D1B, -E1A
IO-720	-A1BD, -B1BD, -C1BD, -D1BD, -D1CD

Required Maintenance Documentation

N 1056C
AIRCRAFT REGISTRATION NO.

31-7652130
AIRCRAFT SERIAL NO.

PA31-350
TYPE AIRCRAFT

adNote™

2006-3-8 N/M
AD NUMBER

Aero Advantage Vac. Pump

If multi-engine: ☐ Left ☐ Right ☐ Front ☐ Rear Mfg./ Part No.:_____

COMPLIANCE DATE	TOTAL TIME AT COMPLIANCE	TACH OR RECORDING METER TIME AT COMPLIANCE	METHOD OF COMPLIANCE	AUTHORIZED SIGNATURE & NUMBER
			N/A Not Fastened	

Amendment 39-14472; Docket No. FAA-2005- 20440; Directorate Identifier 2005-CE-05-AD.

When Does This AD Become Effective?

(a) This AD becomes effective on March 10, 2006.

What Other ADs Are Affected by This Action?

(b) None.

What Airplanes Are Affected by This AD?

(c) This AD affects ADV200 series (part numbers (P/Ns) ADV211CC and ADV212CW) vacuum pumps installed on, but not limited to, the following aircraft that are certificated in any category. These vacuum pumps can be installed under supplemental type certificate number SA10126SC, through field approval, or other methods:

Make	Model
Alexandria Aircraft, LLC	14–19, 14–19–2, 14–19–3, 17–30, 17–31, 17–31TC, 17–30A, 17–31A, and 17–31ATC.
Alliance Aircraft Group, LLC	H–295 (USAF U10D).
American Champion Aircraft Corp	7AC, 7ECA, 7GC, 7GCA, 7GCAA, 7GCB, 7GCBC, 7HC, 7KC, 7KCAB, 8GCBC, and 8KCAB.
Cessna Aircraft Company, The	172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H, 172I, 172K, 172L, 172M, 172N, 172P, 172Q, 182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, R182, T182, TR182, 172RG, R172E, R172F, R172H, R172J, 152, A152, 210, 210–5 (205), 210–5A (205A), 210A, 210B, 210C, 210D, 210E, 210F, 210G, 210H, 210J, 210K, 210L, 210M, 210N, P210N, T210G, T210H, T210M, T210N, T210R, 185, 185A, 185B, 185C, 185D, 185E, 180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180I, 120, 140, 170, 170A, 170B, 177, 177A, 177B, 207, 207A, T207, T207A, 177RG

AIRWORTHINESS DIRECTIVE COMPLIANCE RECORD

AIRCRAFT PA-22-135 N2631A S/N 22-903
ENGINE Lycoming 0-290-D2 S/N 4563-21
PROPELLER Sensenich M 76AM2 S/N 6662

AD NUM. & AMEND. NUM.	REV. NUM. & DATE	SUBJECT	DATE/HOURS AT COMP.	METHOD OF COMP.	ONE TIME	RECURRING	COMP. DUE DATE/HRS	AUTHORIZED SIGNATURE & NUMBER
76-07-12 39-3024	R-1 8-30-77	Bendix ignition switch	11-11-94 1850TT	Operational check and inspection		X	1900TT	*Phil Lomax* A&P 000000000
93-18-03 39-8688	Original 10-29-93	One-piece venturi	3-17-95 1850OTT	Installed one-piece venturi Carb S/N BR-549	X			*Phil Lomax* A&P 000000000

AD sign offs in the records.

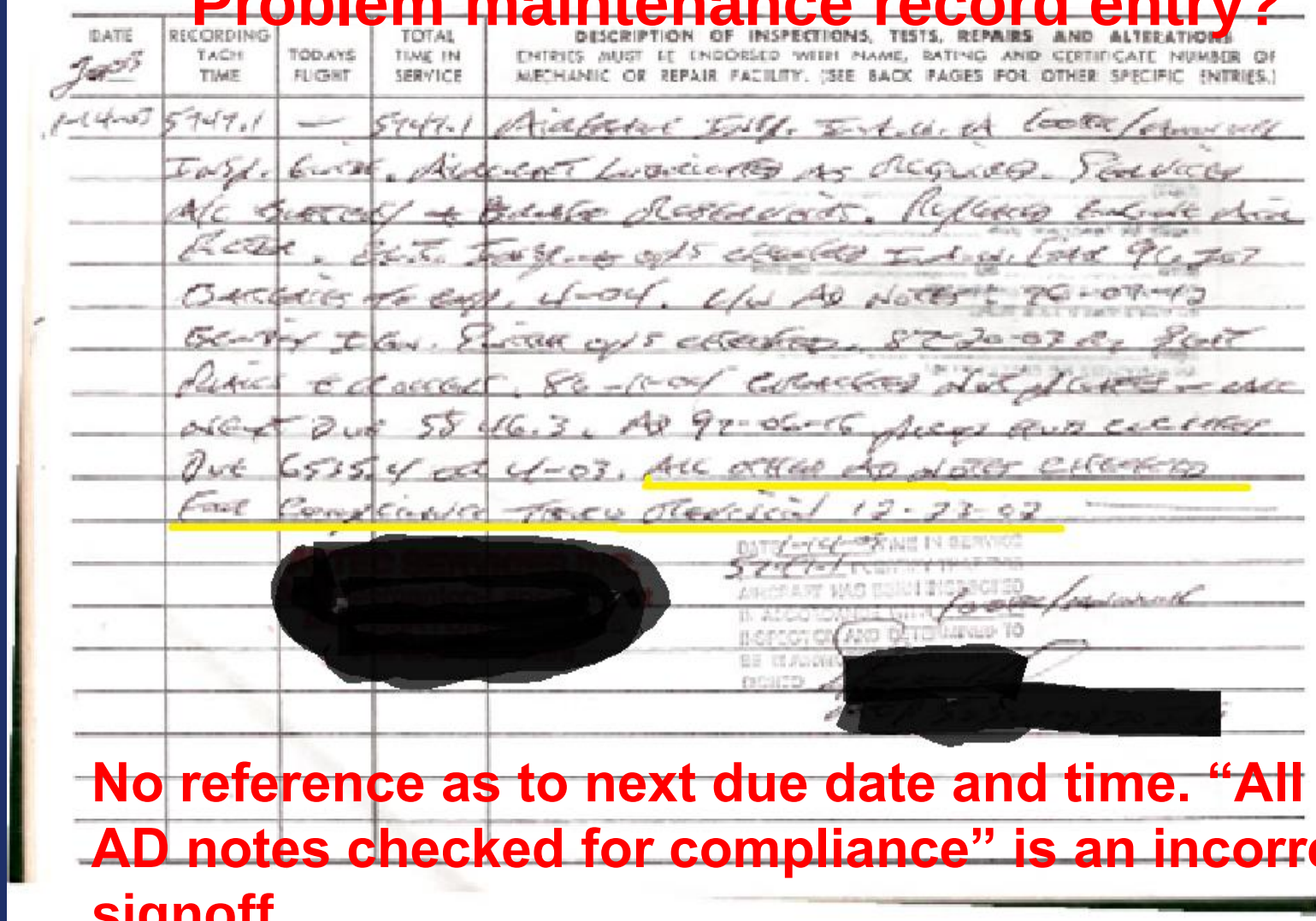
- **Some common yet incorrect entries found in some records are:**
  - **“PCW”** with no other information

    or
  - **“N/A”** with no other information

    or
  - an entry without enough information

    or
  - **“All ADs COMPLIED WITH” !!!**

Problem maintenance record entry?

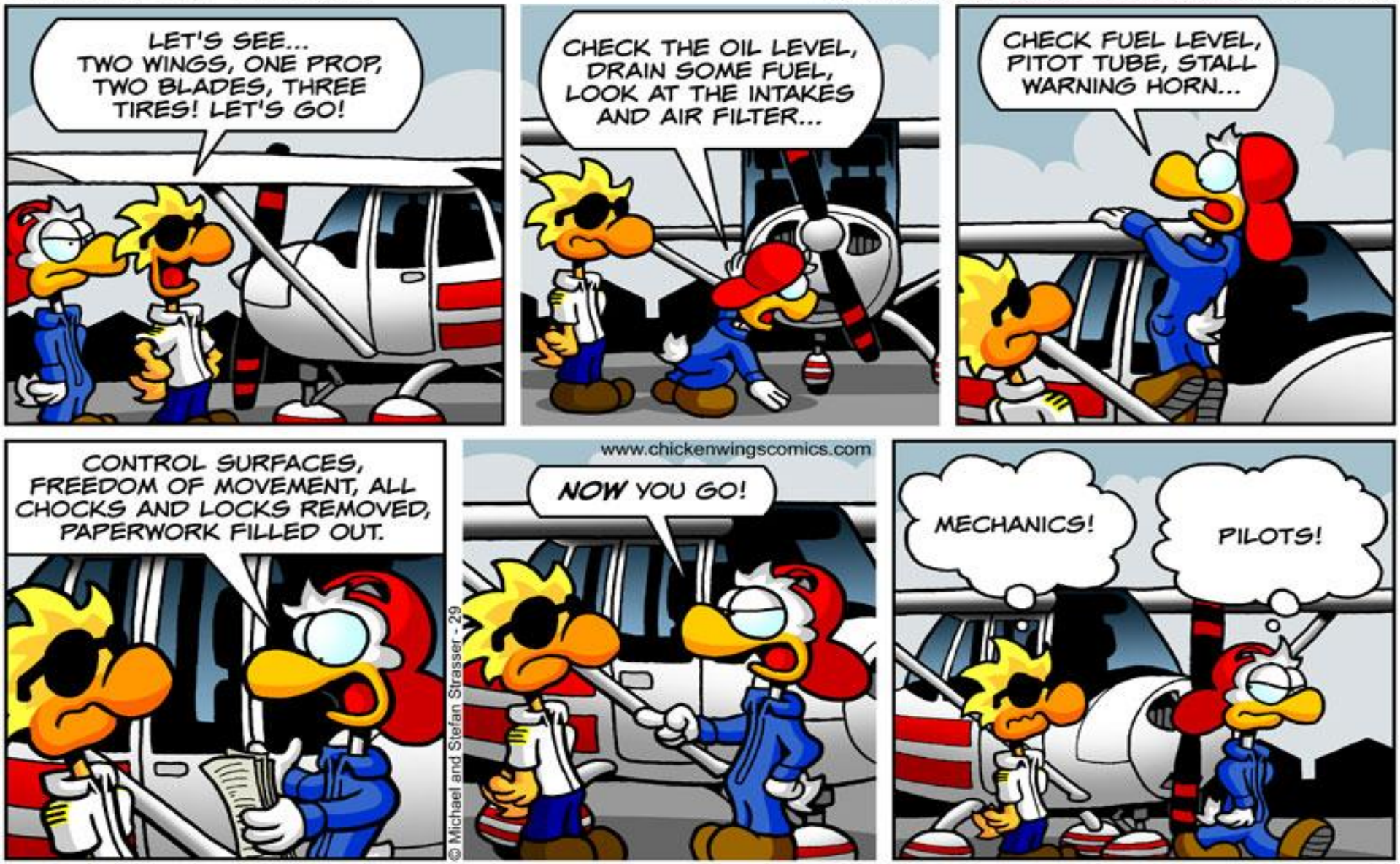


No reference as to next due date and time. "All other AD notes checked for compliance" is an incorrect signoff.

Preflight

- 14 CFR section 91.103

- "Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight"…


CHICKEN WINGS
BY MICHAEL AND STEFAN STRASSER
LET'S SEE... TWO WINGS, ONE PROP, TWO BLADES, THREE TIRES! LET'S GO!
CHECK THE OIL LEVEL, DRAIN SOME FUEL, LOOK AT THE INTAKES AND AIR FILTER...
CHECK FUEL LEVEL, PITOT TUBE, STALL WARNING HORN...
CONTROL SURFACES, FREEDOM OF MOVEMENT, ALL CHOCKS AND LOCKS REMOVED, PAPERWORK FILLED OUT.
www.chickenwingscomics.com
NOW YOU GO!
MECHANICS!
PILOTS!
© Michael and Stefan Strasser - 29

Quotes you never want associated with yourself.

- "The pilot's improper preflight inspection resulted in a total loss of engine power due to fuel exhaustion."

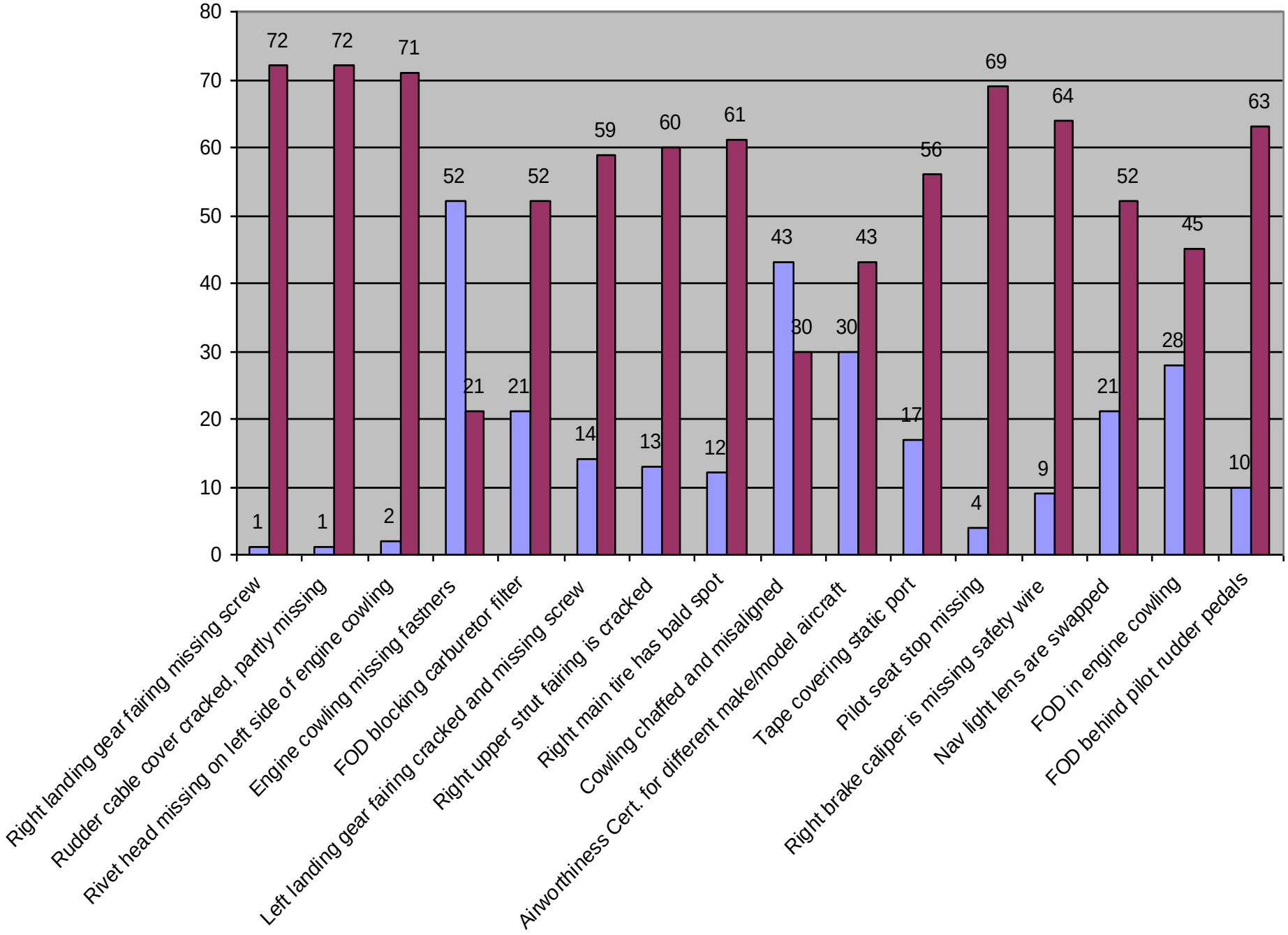
- "Contributing to the accident was the pilot's failure to perform a thorough preflight inspection."

- "The pilot's inadequate post-maintenance and preflight inspections resulted in the separation of the left main wheel after takeoff."

- "The pilot's inadequate preflight planning resulted in the airplane's loading beyond its maximum gross weight."

- "The failure of both pilots to ensure that no water was present in the fuel."

- "The pilot's inadequate preflight inspection resulted in the in-flight opening of the engine cowling."


80
70
60
50
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72
72
71
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52
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59
14
60
13
61
12
43
30
43
30
56
17
69
4
64
9
52
21
45
28
63
10
Right landing gear fairing missing screw
Rudder cable cover cracked, partly missing
Rivet head missing on left side of engine cowling
Engine cowling missing fastners
FOD blocking carburetor filter
Left landing gear fairing cracked and missing screw
Right upper strut fairing is cracked
Right main tire has bald spot
Cowling chaffed and misaligned
Airworthiness Cert. for different make/model aircraft
Tape covering static port
Pilot seat stop missing
Right brake caliper is missing safety wire
Nav light lens are swapped
FOD in engine cowling
FOD behind pilot rudder pedals

FAASTeam SPECIAL EMPHASIS PROGRAM

COMPREHENSIVE AIRWORTHINESS CHECKLIST

Aircraft:_____ Reg#:_____ S/N:_____

No secrets, No surprises: The following items must be verified and current in order to render a *'Standard Airworthiness'* determination on a civil aircraft operating FAR Part 91.

_____ **Airworthiness Certificate** (original) - **Ref. FAR 91.203**
_____ **Registration Certificate** (current) - **Ref. FAR 91.203**
_____ **Radio Operator License** (Int'l flts) **Ref. 47 CFR *87.18*** (FCC reg)
_____ **Aircraft Flight Manual** or **Pilot Operating Handbook** (current revision) including current weight and balance data and handbook supplements - **Ref. FAR 91.9**
_____ **Current status** listing of all applicable **Airworthiness Directives** including time and/or date of recurring action - **Ref. FAR 91.417, *FAR 39***
_____ **Inspection** time/date due, **Annual/100 hour/progressive event- Ref. FAR 91.409/417**
_____ **ELT** - battery due date - **Ref. FAR 91.207 (c)** (50 NM radius)
_____ **ELT** - inspection within last 12 months - **Ref. FAR 91.207 (d)**
_____ **VOR** equipment check for IFR operation - **Ref. FAR 91.171 (IFR)**
_____ **Compass** Deviation Card - **Ref. CAR 3.758 - FAR 23.1547**
_____ **Static System Inspection** certification - **Ref. FAR 91.411 (IFR)**
_____ **Altimeter Inspection** certification - **Ref. FAR 91.411 (IFR)**
_____ **Transponder Inspection** certification - **Ref. FAR 91.413 (ATC)**
_____ **Current Status of Life-limited parts** per T.C.D.S. - **Ref. FAR 91.417**
_____ **FAA Form 337's** for alterations or repairs - **Ref. FAR 91.417**
_____ **Inoperative Equipment** certifications - **Ref. FAR 91.213**
_____ **External Data Plate - Ref. FAR 45.11**

"Airworthy" means an aircraft and component parts meet its type design (or properly altered configuration) AND is in condition for safe operation. *(References: Public Law 103-272, Section 44704, FAR 3.5, FAR 21.31, FAR 21.41, FAR 21.183, AC43.13-1B glossary, FAA Form 8100-2)*

Fellow airmen: This general checklist is a living document and references were current at the time of this revision. It was not developed or intended to be an 'end-all' checklist for flight planning purposes. The purpose of this checklist list is to aid the airman and to increase industry awareness of the associated responsibilities with the term "airworthy". The decision to accept an aircraft in its' present condition rests with the Pilot-In-Command. Constructive criticism of this content is welcome and encouraged. At least then we know you are putting some thought into the matter.

Have a Safe Flight!

Revision date: 05/31/2013


PRE-FLIGHT
You did it last time